18652/990

NAUTICAL CHART 18652

SAN FRANCISCO BAY TO ANTIOCH

CALIFORNIA

MERCATOR PROJECTION AT SCALE 1:40,000 & 1:80,000
SOUNDINGS IN FEET AT MEAN LOWER LOW WATER
North American Datum of 1983
(World Geodetic System 1984)

Heights in feet above Mean High Water

AUTHORITIES

Hydrography and topography by the National Ocean Service, Charting and Geodetic Services with additional data from the Corps of Engineers, Geological Survey, U.S. Coast Guard, and Department of Navy.

HORIZONTAL DATUM

The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83) which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 must be corrected an average of 0.262" southward and 3.882" westward to agree with this chart.

SUPPLEMENTAL INFORMATION

Consult U.S. Coast Pilot 7 for important supplemental information.

ABBREVIATIONS

For complete list of Symbols and Abbreviations see Chart No. 1
COLREGS. International Regulations for Preventing Collisions at Sea, 1972.
Demarcation lines are shown thus: ——

CAUTION

This chart has been corrected from the Notice to Mariners published weekly by the Defense Mapping Agency Hydrographic/Topographic Center and the Local Notice to Mariners issued periodically by each U.S. Coast Guard district to the date shown in the lower left hand corner.

COURSES

Distances are given in International Nautical Miles. Courses are TRUE and must be CORRECTED for any variation and compass deviation.

WARNING

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

RADAR REFLECTORS

Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEAN SERVICE

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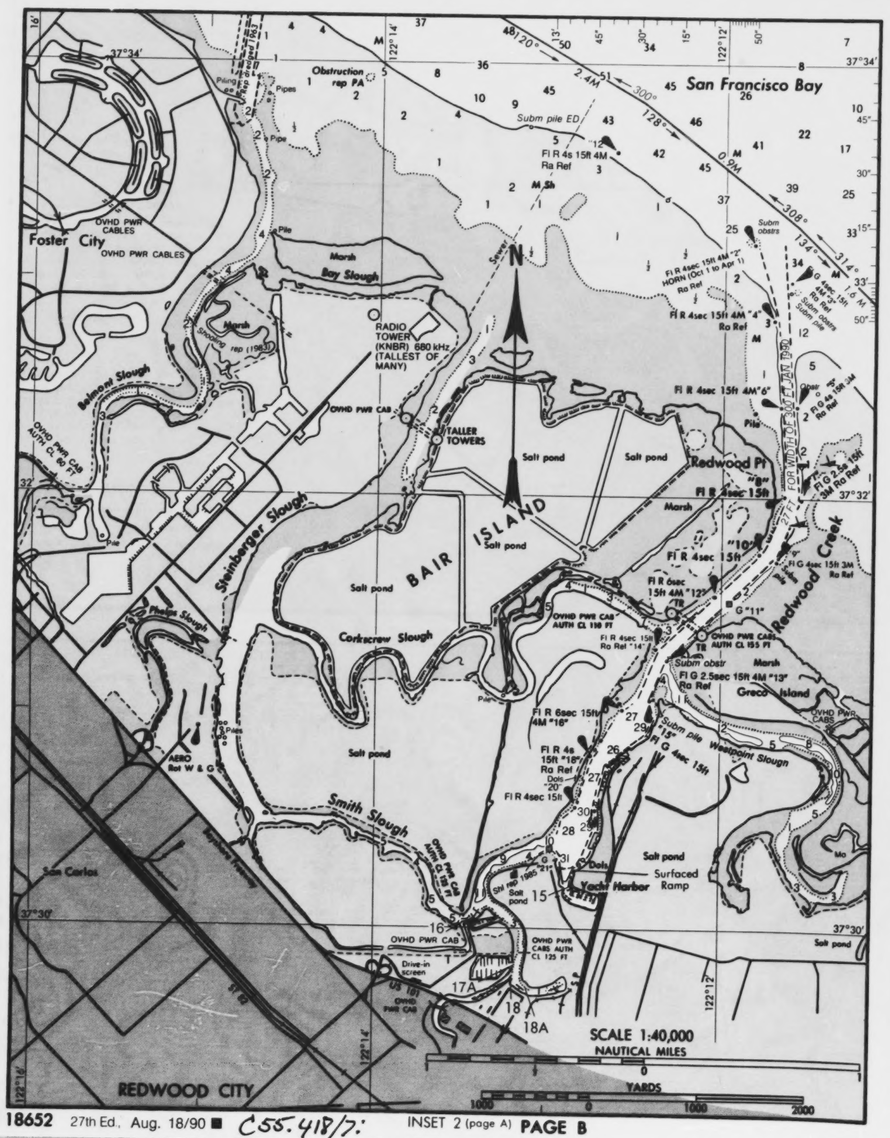
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE



NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California. Refer to charted regulation section numbers.

COURSES

Courses are TRUE and must be CORRECTED for any variation and compass deviation.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other privately maintained buoys are not all listed in the U.S. Coast Guard Light List.

NOTE C

SAN FRANCISCO VESSEL TRAFFIC SERVICE

The Coast Guard operates a voluntary Vessel Traffic Service (VTS) to facilitate the safety of navigation in San Francisco Bay. The basic elements of the Service are: a traffic routing system, a communications network and a surveillance system. The Vessel Traffic Center (VTC) is located on Yerba Buena Island and may be contacted on channel 13 or 16. The call sign is "San Francisco Vessel Traffic Service". Additional information on the VTS is published in the Coast Pilot and information concerning specific operating procedures is available from the VTS.

TRAFFIC LANES

Traffic lanes are intended for use by vessels 300 gross tons and over, arrows indicate the approximate direction of traffic flow within each lane.

CONTRARY VESSEL MOVEMENTS

Vessels with a draft of 45 feet or greater when bound from sea to Anchorage 9 should use the "Deep Draft Route" east of the Golden Gate Bridge. This route is eastbound in the westbound lane, north of Harding Rock and Alcatraz Island, east of Blossom Rock, then south through the C-D or D-E span of the Oakland Bay Bridge to Anchorage 9. Vessels using this route should advise the VTS.

Vessels inbound/outbound to/from facilities in Oakland may desire to transit the D-E span of the Oakland Bay Bridge to facilitate safe passage into/out of the Oakland Bar Channel. The VTC should be notified of such intentions in advance.

LIMITED TRAFFIC AREA

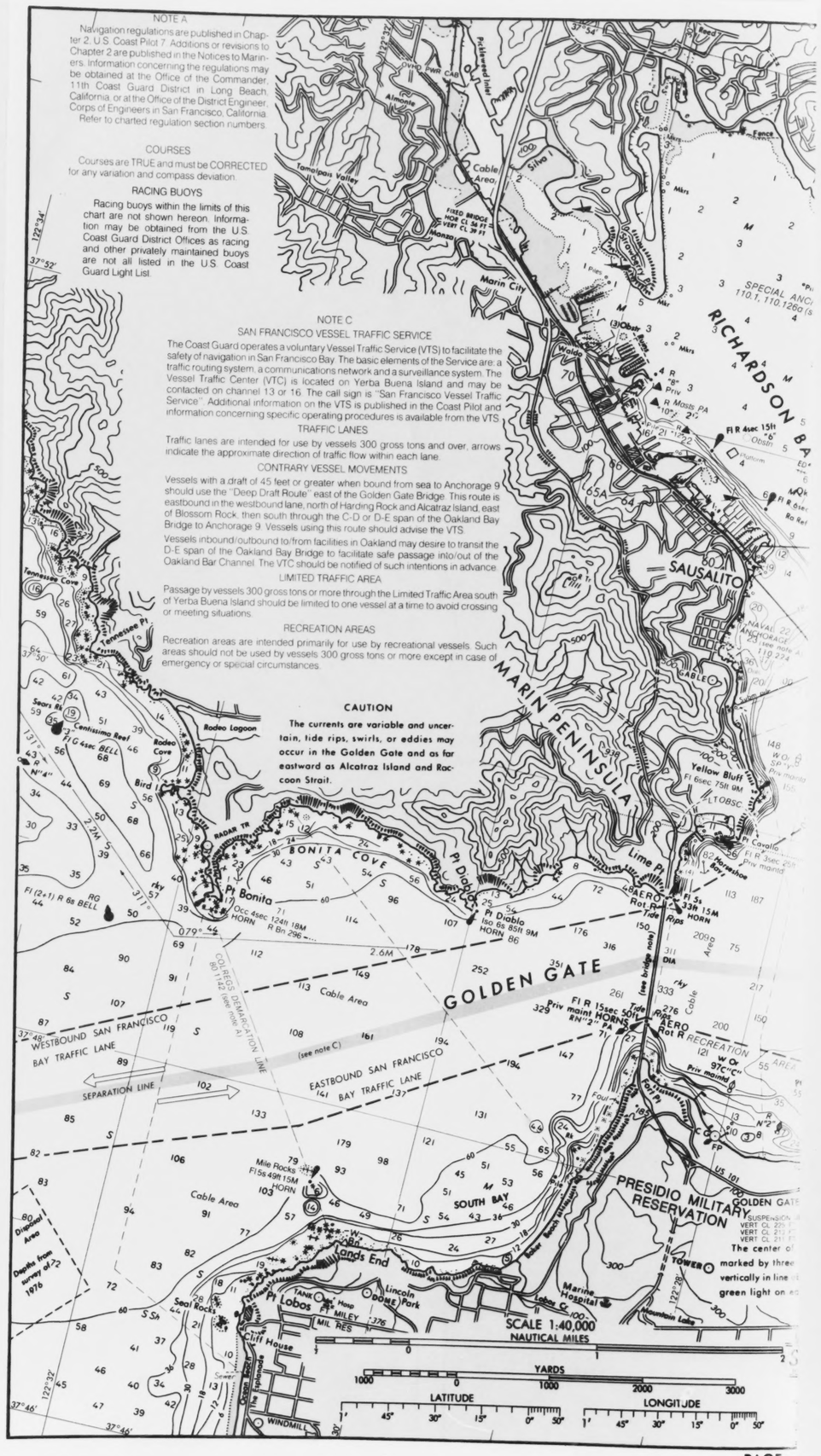
Passage by vessels 300 gross tons or more through the Limited Traffic Area south of Yerba Buena Island should be limited to one vessel at a time to avoid crossing or meeting situations.

RECREATION AREAS

Recreation areas are intended primarily for use by recreational vessels. Such areas should not be used by vessels 300 gross tons or more except in case of emergency or special circumstances.

CAUTION

The currents are variable and uncertain, tide rips, swirls, or eddies may occur in the Golden Gate and as far eastward as Alcatraz Island and Raccoon Strait.



CONTINUED ON PAGE C

RICHMOND HARBOR CHANNEL DEPTHS
Controlling depths for project widths in feet at M.L.L.W.
2-88 7-89

Entrance Channel 33.0
Turning Basin 32.8
Point Potrero Reach 33.2
Point Potrero Turn 28.8
Harbor Channel 23.7
Santa Fe Channel 30.3
Turning Basin 24.8

TIBURON PENINSULA
RACCOON STRAIT
ANGEL ISLAND
SAN FRANCISCO BAY
RICHMOND
Richmond Inner Harbor
EL CERRITO
ALBANY
BERKELEY
EMERYVILLE
OAKLAND
SAN FRANCISCO
Treasure Island
Yerba Buena I.
OAKLAND BAY BRIDGE
SAN FRANCISCO OAKLAND BAY BRIDGE
Tiburon
Belvedere
Paradise Cove
Pt Chauncey
STANDPIPE
Pt Stuart
Pt Knox
Pt Blunt
Pt Campbell
Pt Cavallo
Pt Diablo
Pt Isabel
Fleming Pt
Berkeley Pier (Ruins)
Berkeley Yacht Hbr
Richmond Marina Bay
Terminal No. 3
Point Potrero
Brooks I
Albany Hill
Cerrito Cr
Codornices Cr
Berkeley Aquatic Park
Fishing Pier
Duck blinds (ruins)
Pt Knox Shoal
Alcatraz I
Arch Rock
Shag Rocks
Harding Rock
Blossom Rock
Alcatraz Shoal
Presidio Shoal
Mile Rock
Lobos
Lombard Street
Telegraph Hill
North Pt
Nob Hill
Geary Street
Scott St
Van Ness Ave
Aquatic Park
Cable Area
Pumping Ground
Prohibited Disposal Area
Depths from surveys of 1989
Magnetic Silencing Range (inactive)
Submarine Operating Area 334.1090 (see note A)
Recreation Area (see note C)
Restricted Area 334.1070 (see note A)
Restricted Area 334.1050, 334.1060 (see note A)
Restricted Area 334.1040 (see note A)
Restricted Area 334.1040 (see note A)
Temporary Anchorage (see note A) 110.224
General Anchorage 110.224 (see note A)
Precautionary Area
Separation Line
Southbound San Francisco Bay Traffic Lane (see note C)
Northbound San Francisco Bay Traffic Lane (see note C)
Southampton Shoal
Southampton Shoal Channel
Entrance Channel
Turning Basin
Point Potrero Reach
Point Potrero Turn
Harbor Channel
Santa Fe Channel
Richmond Harbor Channel
Inner Hbr Ent Chan
Outer Hbr Ent Chan
Bar Channel
Middle Harbor
Oakland Outer Harbor
Seventh Street Marine Terminal
Radio Tower
Cupola
Pyramidal Bldg
Ferry Tower
Customhouse
Tank Farm
Richmond Terminal No. 1
Richmond Terminal No. 3
Richmond Marina Bay
Nichols Knob
Surrocco Ramp
Hoffman Blvd
Cutting Blvd
Ohio St
Marina Way
Ashbury Ave
Siesta
Vernon Blvd
San Pablo Ave
East Shore Hwy
Albany Bulb
Fleming Pt
Codornices Cr
Berkeley Aquatic Park
Duck blinds
Piles
Pipe
Stake
Foul
Subm piles
Subm ruins
Subm stone
Dolphin
Platform
Tower
Stack
Tank
Bldg
Cupola
Radio Tower
Ferry Tower
Pyramidal Bldg
Customhouse
Mil Res
Hosp
Ch
Sch
Tunnel
Pipeline Area
Cable and Pipeline Area
Duck blinds (ruins)
Foul with piling
Piles
Pipe
Stake
Subm piles
Subm ruins
Subm stone
Dolphin
Platform
Tower
Stack
Tank
Bldg
Cupola
Radio Tower
Ferry Tower
Pyramidal Bldg
Customhouse
Mil Res
Hosp
Ch
Sch
Tunnel
Pipeline Area
Cable and Pipeline Area
Duck blinds (ruins)
Foul with piling
Piles
Pipe
Stake
Subm piles
Subm ruins
Subm stone
Dolphin
Platform
Tower
Stack
Tank
Bldg
Cupola
Radio Tower
Ferry Tower
Pyramidal Bldg
Customhouse
Mil Res
Hosp
Ch
Sch
Tunnel
Pipeline Area
Cable and Pipeline Area

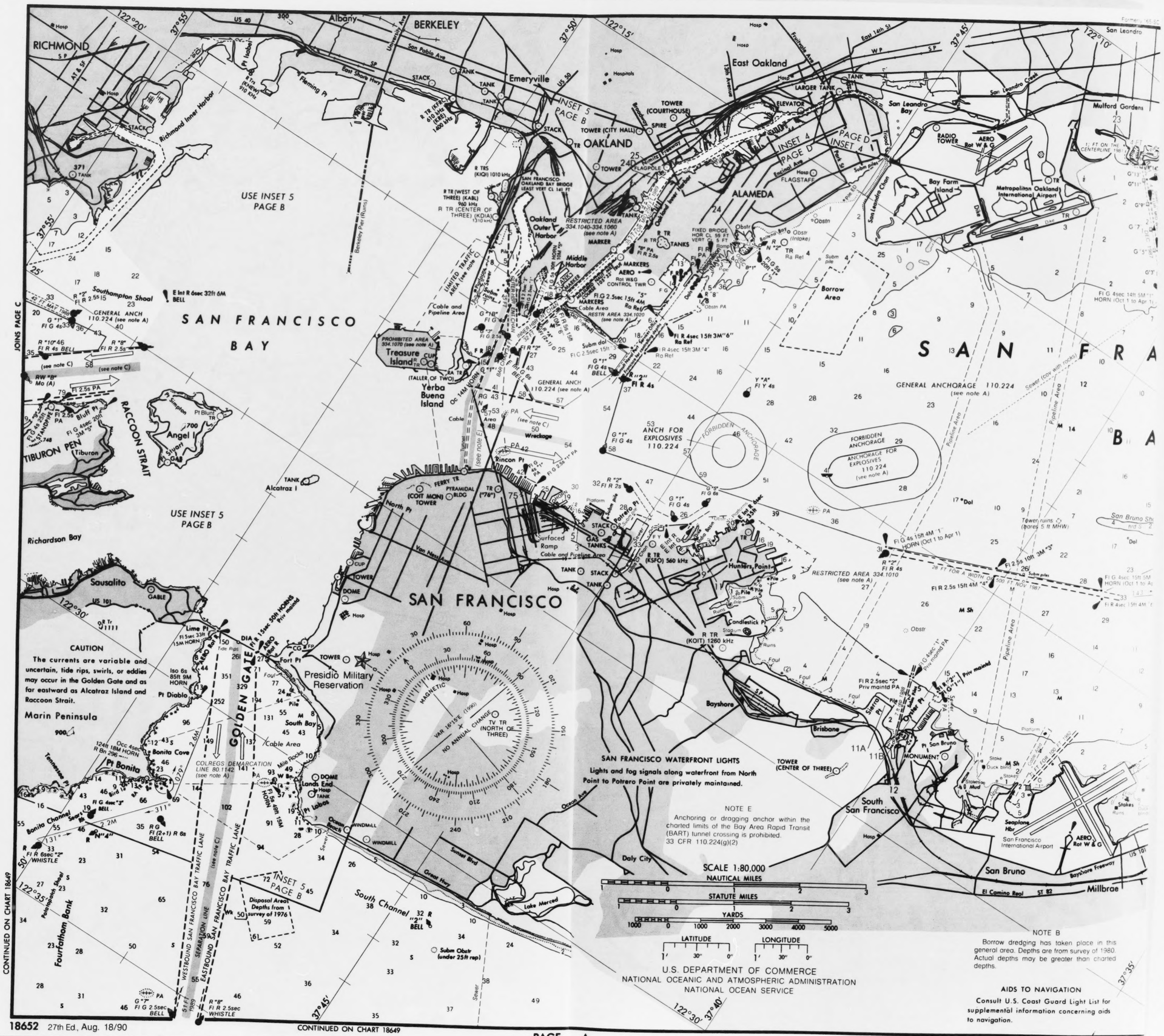
WATERFRONT LIGHTS
Lights and fog signals along waterfront from North Point to Potrero Point are privately maintained.

NOTE E
Anchoring or dragging anchor within the charted limits of the Bay Area Rapid Transit (BART) tunnel crossing is prohibited.
33 CFR 110.224(g)(2)

INSET 5 (pages A and C)

CONTINUED ON PAGE A

18652


RICHMOND
Albany
BERKELEY
Emeryville
OAKLAND
East Oakland
ALAMEDA
San Leandro
Mulford Gardens
San Leandro Bay
Bay Farm Island
Metropolitan Oakland International Airport
SAN FRANCISCO BAY
Richmond Inner Harbor
Oakland Outer Harbor
Middle Harbor
Fleming Pt
Berkeley Pier (Ruins)
Southampton Shoal
Treasure Island
Yerba Buena Island
Angel I
Alcatraz I
TIBURON PEN
Tiburon
RACCOON STRAIT
Richardson Bay
Sausalito
Pt Blunt
Bluff Pt
Rincon Pt
North Pt
Hunters Point
Candlestick Pt
Bayshore
Brisbane
South San Francisco
San Bruno
Millbrae
Daly City
Lake Merced
Sunset Blvd
Great Hwy
Ocean Ave
Van Ness Ave
Embarcadero
Broadway
Nimitz Freeway
Fruitvale Ave
Foothill Blvd
East 14th St
San Leandro Creek
Oakland Inner Harbor
Alameda Canal
Pipeline Area
Borrow Area
Cable and Pipeline Area
Surfaced Ramp
Disposal Areas Depths from survey of 1976
Mile Rocks
Lands End
Pt Lobos
Pt Bonita
Bonita Cove
Pt Diablo
Lime Pt
Fort Pt
Presidio Military Reservation
South Bay
Seaplane Hbr
San Francisco International Airport
Fourfathom Bank
South Channel
Subm Obstr (under 25ft rep)
Yerba Buena Island
Treasure Island
Oakland Inner Harbor
Alameda Canal
Bay Farm Island
San Leandro Bay
San Leandro Creek
Mulford Gardens
Hunters Point
Candlestick Pt
Bayshore
Brisbane
South San Francisco
San Bruno
Millbrae
Daly City
Lake Merced
Sunset Blvd
Great Hwy
Ocean Ave
Van Ness Ave
Embarcadero
Broadway
Nimitz Freeway
Fruitvale Ave
Foothill Blvd
East 14th St
San Leandro Creek
Oakland Inner Harbor
Alameda Canal
Pipeline Area
Borrow Area
Cable and Pipeline Area
Surfaced Ramp
Disposal Areas Depths from survey of 1976
Mile Rocks
Lands End
Pt Lobos
Pt Bonita
Bonita Cove
Pt Diablo
Lime Pt
Fort Pt
Presidio Military Reservation
South Bay
Seaplane Hbr
San Francisco International Airport
Fourfathom Bank
South Channel
Subm Obstr (under 25ft rep)
USE INSET 5 PAGE B
USE INSET 5 PAGE B
INSET 5 PAGE B
INSET 5 PAGE B
INSET 4 PAGE D
INSET 4 PAGE D
JOINS PAGE C
CONTINUED ON CHART 18649
CONTINUED ON CHART 18649
RESTRICTED AREA 334.1040-334.1060 (see note A)
RESTRICTED AREA 334.1010 (see note A)
PROHIBITED AREA 334.1070 (see note A)
GENERAL ANCHORAGE 110.224 (see note A)
ANCH FOR EXPLOSIVES 110.224
FORBIDDEN ANCHORAGE
ANCHORAGE FOR EXPLOSIVES 110.224 (see note A)
COLREGS DEMARCATION LINE 80.1142 (see note A)
SEPARATION LINE
WESTBOUND SAN FRANCISCO BAY TRAFFIC LANE
EASTBOUND SAN FRANCISCO BAY TRAFFIC LANE
CAUTION
The currents are variable and uncertain, tide rips, swirls, or eddies may occur in the Golden Gate and as far eastward as Alcatraz Island and Raccoon Strait.
Marin Peninsula
SAN FRANCISCO WATERFRONT LIGHTS
Lights and fog signals along waterfront from North Point to Potrero Point are privately maintained.
NOTE E
Anchoring or dragging anchor within the charted limits of the Bay Area Rapid Transit (BART) tunnel crossing is prohibited. 33 CFR 110.224(g)(2)
NOTE B
Borrow dredging has taken place in this general area. Depths are from survey of 1980. Actual depths may be greater than charted depths.
AIDS TO NAVIGATION
Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
SCALE 1:80,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
18652 27th Ed., Aug. 18/90
PAGE A

NOTE G
CAUTION

Mariners are warned that numerous uncharted piles, snags, pumps, siphons, and pipes, some submerged, may exist along the edges of the waterways.

SCALE 1:80,000
NAUTICAL MILES
STATUTE MILES
YARDS
LATITUDE
LONGITUDE

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other privately maintained buoys are not all listed in the U.S. Coast Guard Light List.

NOTE F
CAUTION

Mariners are warned that numerous uncharted pipes may exist along the east side of the channel leading from San Francisco Bay, south end, to Newark Slough. Transit in this area should be conducted with caution.

CAUTION

All craft should avoid areas where the skin diver's flag, a red square with a diagonal white stripe, is displayed.

COURSES

Courses are TRUE and must be CORRECTED for any variation and compass deviation.

CONTINUED ON CHART 18651

INSET 1 PAGE A

INSET 2 PAGE B

INSET 3 PAGE A

CAUTION

Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

NOTE A

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Refer to charted regulation section numbers.

INSET 3 (page A)

INSET 1 (page A)

JOINS PAGE E

Formerly 165 SC, 1st Edition

BENICIA-MARTINEZ HIGHWAY BRIDGE

Privately maintained lights marking this bridge are shown, as follows:

An occulting red light, with 3 fixed white lights in a vertical line above, on each side of the span over the middle of Suisun Pt. Reach. The occulting red lights change to occulting green when the lift span of the adjacent railroad bridge is fully open.

A fixed green light on each side of the span over the middle of the channel between Piers 6 and 7 (approx. 38°02'36"N., 122°07'27"W.).

Fixed red lights mark Piers 4 through 12 and fixed green lights mark center of the spans.

SUISUN BAY

CARQUINEZ STRAIT

BENICIA

MARTINEZ

Port Costa

Crockett

Valona

Ozol

Port of Benicia

Pacheco Creek

Bulls Head Pt

Suisun Pt

Southampton Bay Wrecks

Dillon Pt

Eckley

Glencove

Carquinez Heights

Selby

Tubbs Island

Little Island

Skagg Island

Sears Point

Russ Island

Coon Island

Mud Slough

Edgerly

Goodluck Pt

Napa Junction

Napa County Airport

Rocktram

Jamota

Jacks Bend

Fagan Slough

Horseshoe Bend

Bull I

Wingo

Sonoma Creek

Bush Slough

Third Napa Slough

Second Napa Slough

Dutchman Slough

Hudeman Slough

Dewitt Slough

Chain Slough

Napa Slough

Petaluma River

Lakeville

Wetland Slough

San Antonio Cr

Petaluma

Lakeville Hy

Petaluma River Ext

Bridge Rd

Redwood Hy

Haystack Ldg

Surfaced Ramps

Cable and Pipeline Area

Pipeline Area

Cable Area

Disposal Areas Depths from survey of Feb-Mar 1989

Disposal Areas Depths from survey of 1949 to 1987

RESERVE FLEET 162.270 (see note A)

GENERAL ANCHORAGE 110.224 (see note A)

GEN ANCH 23 110.224 (see note A)

GEN ANCH 22 110.224 (see note A)

Fl R 2.5sec 15ft "1" 3M "2" Ra Ref

Fl R 6sec 15ft 4M "4" Ra Ref

Fl R 4s 3M "20" BELL (Oct 1 to Apr 1)

Fl R 6s 38ft 4M "22"

Fl G 4s 20ft 5M "25"

Fl G 4sec 20ft

Fl R 4sec 15ft

F G 13ft "1" Priv

F R 12ft Priv "2"

Fl G 4s 25ft

Fl G 2.5s

Fl R 16ft HORN Priv maintd

Fl R 4sec 15ft "16"

Fl R 4sec 15ft "20"

Fl G 4sec 15ft "13"

Fl G 4sec 15ft "11"

Fl G 4sec 15ft "9"

Fl G 4sec 15ft "7"

Fl G 2.5sec 15ft "5"

Fl R 4sec 15ft "8"

Fl R 4sec 15ft "6"

Fl R 4sec 15ft "4"

Fl R 4sec 15ft "2"

Fl R 4sec 15ft 4M "2"

Fl G 4s 20ft 5M "25"

Fl G 4sec 15ft "1"

Fl G 4sec 15ft "3"

Fl G 4sec 15ft "15"

Fl G 4sec 15ft "17"

Fl G 4sec 15ft "19"

Fl G 4sec 15ft "21"

Fl G 4sec 15ft "23"

Fl G 4sec 15ft "25"

Fl G 4sec 15ft "27"

Fl G 4sec 15ft "29"

Fl G 4sec 15ft

CONTINUED ON LEFT PANEL AT BOTTOM OF PAGE

SCALE 1:80,000

NAUTICAL MILES

STATUTE MILES

YARDS

LATITUDE

LONGITUDE

CAUTION

Small craft should stay clear of large commercial and government vessels even if small craft have the right-of-way.

CAUTION

All craft should avoid areas where the skin diver's flag, a red square with a diagonal white stripe, is displayed.

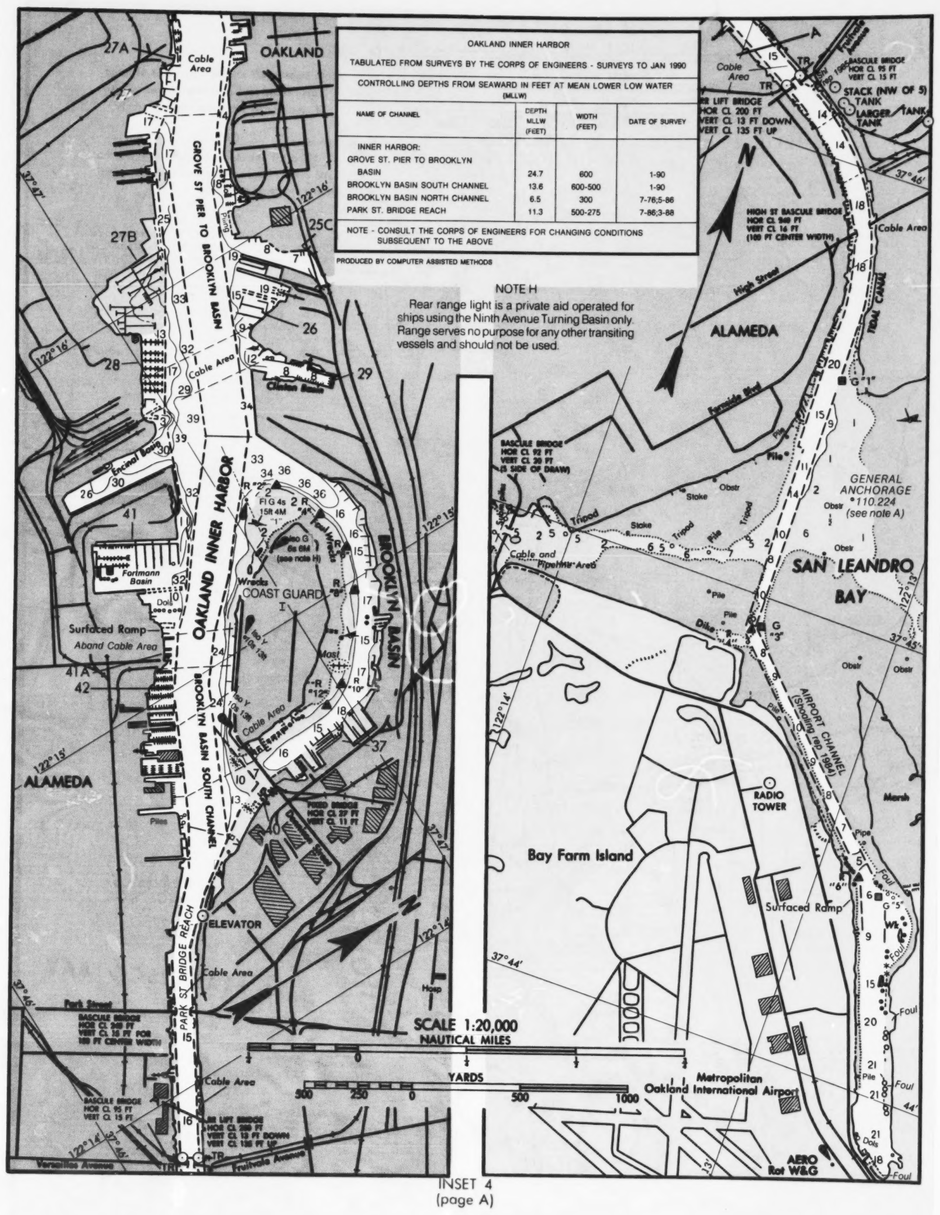
NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California; or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.

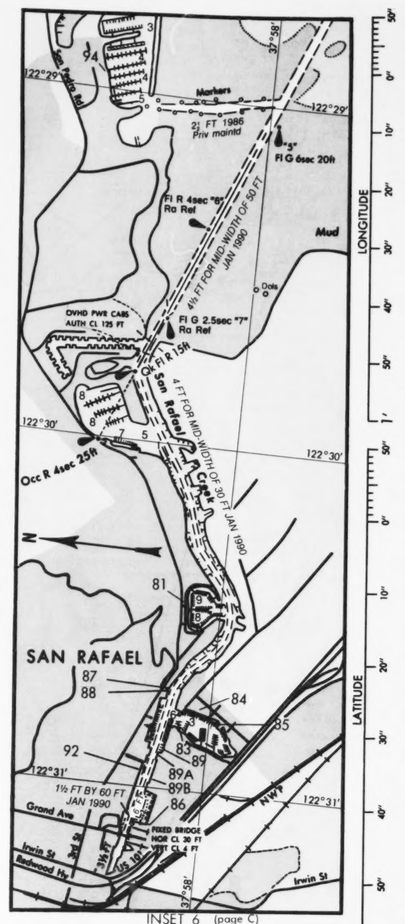
Refer to charted regulation section numbers.

PAGE D
INSET 7
USE INSET 5 PAGE B
INSET 5 PAGE B
INSET 6 PAGE D
JOINS PAGE A

VALLEJO
Vallejo Heights
NAPA RIVER
Mare Island
Knight Island
South Slough
Duckhorn Slough
Terrace
Sonoma Blvd
SF&NV
SPL
HOTEL SIGN
R TR (KNBA) 1190kHz
TOWERS
Subm pipe
Cable Area
Disposal Areas
CARQUINEZ STRAIT
TWO FIXED BRIDGES
HOR CL 998 FT
VERT CL N SPAN 146 FT
VERT CL S SPAN 136 FT
OVHD PWR CABS
AUTH CL 179 FT
Selby
Tormey
TANK FARM
STACK (NORTHERLY OF SIX)
Davis Pt
Rodeo
Lone Tree Pt
TANKS
TOWER (FLAME)
Stakes
Hercules
Dots
Mud
Pinole
El Sobrante
Wilson Pt
Tank Farm
Duck blind
Marsh
Sobrante
Pinole Pt
Pinole Shoal
PINOLE SHOAL CHANNEL
Fl G 6s 16ft 4M "9" Ra Ref
Vessels drawing less than 20 feet are not permitted to enter or cross over Pinole Shoal dredged channel.
SAN PABLO BAY
SAN PABLO
North Richmond
RICHMOND
Hospital
Richmond Inner Harbor
Point Richmond
Castro Cv
Castro Pt
RESTRICTED AREA 334.1090 (see note A)
RICHMOND-SAN RAFAEL BRIDGE
WEST CHANNEL HOR CL 1800 FT VERT CL 185 FT
EAST CHANNEL HOR CL 970 FT VERT CL 135 FT
SAN FRANCISCO BAY
Southampton Shoal
E Int R 6sec 32ft 6M BELL
SAN FRANCISCO BAY TRAFFIC LANE
NORTHBOUND
SOUTHBOUND
TRAFFIC SEPARATION LINE
Disposal Area Depths from survey of 1988
SAN PABLO STRAIT
The Brothers
The Sisters
Red Rock
Pt Chauncey
Pt Tiburon
RACCOON STRAIT
TIBURON PENINSULA
Angel Island
Pt Simpton
Pt Blunt
RICHARDSON BAY
Sausalito
Paradise Cay
75A
Corte Madera Creek
All lights are 9 feet above water, equipped with radar reflectors and are privately maintained.
Corte Madera
Marin City
MARIN PENINSULA
BERKELEY
El Cerrito
Albany
AT & SF
San Pablo Ave
East Shore Freeway
Interstate 80
Fleming Pt
Stege
Pt Isabel
R Tr (KNEW) 910 kHz
Richmond-San Rafael Bridge
Marin Is
Lodestowsteel
ABAND RR
US 101
Santa Venetia
Gallinas
Venetia Harbor
Gallinas Creek
Novato Cr
Petaluma Pt
Spoil Bank
Markers (Priv maintd)
Surfaced Ramp
SWING BRIDGE HOR CL 110 FT VERT CL 7 FT
FIXED BRIDGE HOR CL 140 FT VERT CL 70 FT
OVHD PWR CAB AUTH CL 135 FT
OVHD PWR CAB AUTH CL 105 FT
OVHD PWR CAB AUTH CL 94 FT
OVHD PWR CAB AUTH CL 65 FT
OVHD PWR CAB AUTH CL 125 FT
OVHD PWR CAB AUTH CL 130 FT
FIXED BRIDGES HOR CL 40 FT VERT CL 21 FT
BASCULE BRIDGE HOR CL 40 FT VERT CL 10 FT
Cable and Pipeline Area
Corte Madera 3 ft rep 1984 Obstr rep 1986
Pipeline Area
ANCH FOR EXPLOSIVES 110.224
FORBIDDEN ANCH
GENERAL ANCHORAGE 110.224 (see note A)
DANGER AREA 334.1170 (see note A)
DANGER 334.1160 (see note A)
TARGET
Fl G 2.5s 15ft 4M "15" HORN (Oct 1-Apr 1) Ro Ref
Fl G 4sec 15ft 3M "13" Ra Ref
Fl R 4sec 15ft 3M "14" Ro Ref
Qk Fl G 15ft 3M "11" Ra Ref
Fl R 2.5sec 15ft 3M "12" Ra Ref
Fl G 4sec 10ft 3M "7" Ra Ref
Fl G 4sec 15ft "1"
Fl R 2.5sec 15ft "2" HORN (Oct 1-Mar 15)
Fl R 4s 15ft "4"
Fl R 4s 15ft "6"
Fl R 4s 15ft "8"
Fl R 4sec 15ft "10"
Fl R 4s 3M "12"
Fl R 4sec 20ft "14"
Fl R 4s 3M "16"
Fl R 6s 4M "18"
Fl R 4sec 15ft "20"
Fl G 4sec 19ft "3"
Fl G 4s 15ft "5"
Fl G 4s 15ft "7"
Fl G 4s 15ft "9"
Fl G 4s 15ft "11"
Fl G 4s 15ft "13"
Fl G 4s 15ft "15"
Fl G 4s 15ft "17"
Fl R 2.5sec 15ft "2" HORN (Oct 1-Mar 15)
Fl R 4sec 15ft "4"
Fl R 4sec 12ft "4" HORN (Oct 1 to Apr 1)
Fl R 4s 33 MAY 1988
Fl G 4s
Fl R 2.5s
Fl R 4s BELL
Fl G 4sec 20ft "3"
Fl G 4sec 20ft "5"
Fl G 2.5sec 20ft "1"
Fl G 2.5sec 20ft "7"
Fl G 2.5s "11"
Fl G 2.5s "13"
Fl G 4s 25ft "9"
Fl R 4sec 15ft "20"
Fl R 6s 3M
Fl Y 4s Ra Ref Priv PA
Iso R 6s 3M Priv maintd
Qk Fl R 15ft
Occ R 4sec 25ft
R "6" M Fl R 4s
R "8" Fl R 2.5s
R "10" Fl R 6s
R "12" Fl R 4s
R "14" Fl R 4s
R "16" Fl R 4s
R "18" Fl R 4s
R "20" Fl R 4s
R "2" Fl R 2.5s
R "4" Fl R 4s
R "6" Fl R 4s
R "8" Fl R 2.5s
R "10" Fl R 4s BELL
RW "B" Mo (A)
RW "C" Mo (A)
RW "E" Mo (A)
Q "3"
Q "5"
Q "7"
Q "9"
Q "11"
Q "13"
Q "15"
Q "17"
Q "19"
Q "21"
Q "23"
Q "25"
Q "27"
Q "29"
Q "31"
Q "33"
Q "35"
Q "37"
Q "39"
Q "41"
Q


OAKLAND INNER HARBOR
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO JAN 1990
CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)
NAME OF CHANNEL | DEPTH MLLW (FEET) | WIDTH (FEET) | DATE OF SURVEY
INNER HARBOR:
GROVE ST. PIER TO BROOKLYN BASIN | 24.7 | 600 | 1-90
BROOKLYN BASIN SOUTH CHANNEL | 13.6 | 600-500 | 1-90
BROOKLYN BASIN NORTH CHANNEL | 6.5 | 300 | 7-76,5-86
PARK ST. BRIDGE REACH | 11.3 | 500-275 | 7-86,3-88
NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGING CONDITIONS SUBSEQUENT TO THE ABOVE
PRODUCED BY COMPUTER ASSISTED METHODS
NOTE H
Rear range light is a private aid operated for ships using the Ninth Avenue Turning Basin only. Range serves no purpose for any other transiting vessels and should not be used.
OAKLAND
ALAMEDA
SAN LEANDRO BAY
Bay Farm Island
Oakland International Airport
GENERAL ANCHORAGE *110.224 (see note A)
BROOKLYN BASIN
OAKLAND INNER HARBOR
PARK ST. BRIDGE REACH
GROVE ST PIER TO BROOKLYN BASIN
COAST GUARD I
Formann Basin
Surfaced Ramp
ELEVATOR
RADIO TOWER
AERO Rot W&G
SCALE 1:20,000
NAUTICAL MILES
YARDS

INSET 4
(page A)


SAN RAFAEL
Markers
21 FT 1986 Priv maintd
Fl R 4sec "6" Ra Ref
Mud
DVHD PWR CABS AUTH CL 125 FT
Fl G 2.5sec "7" Ra Ref
Fl R 15s
4 FT FOR MID WIDTH OF 30 FT JAN 1990
Occ R 4sec 25ft
Grand Ave
Irwin St
Redwood Hy
FIXED BRIDGE HOR CL 30 FT VERT CL 4 FT
1½ FT BY 60 FT JAN 1990
4½ FT FOR MID WIDTH OF 50 FT JAN 1990
LONGITUDE
LATITUDE
SCALE 1:20,000
NAUTICAL MILE
YARDS

INSET 6 (page C)

CAUTION

For bascule bridges, whose spans do not open to a full vertical position, unlimited overhead clearance is not available for the entire charted horizontal clearance when the bridge is open, due to the inclinations of the drawspans over the channel.

NOTE A

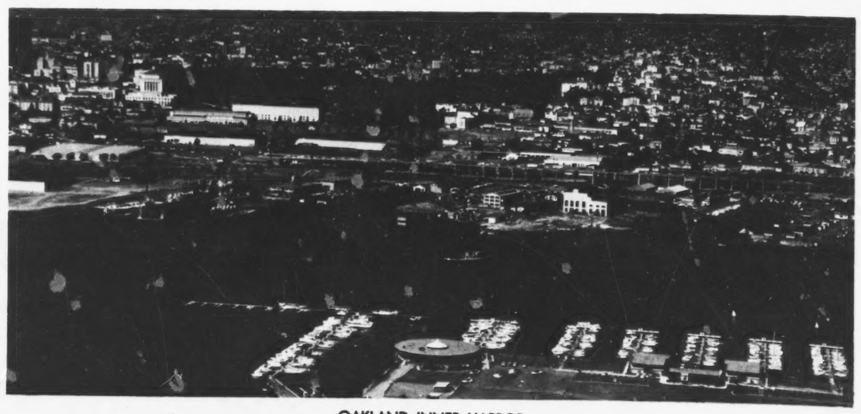
Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.
Refer to charted regulation section numbers.

SAFETY HINTS

1. Keep your chart up to date by applying all Notices to Mariners corrections when you receive them.
2. Read carefully all notes printed on your chart, each is vital to your safety afloat.
3. Learn the meaning of each symbol and abbreviation on your chart from Chart No. 1.
4. The compass on your chart shows the variation from true north, however you must also correct your bearing for the deviation of your boat.
5. Constantly use your chart from the beginning to end of each trip. Keep in mind the orientation of your boat with respect to the chart.
6. Maintain your position on the chart by relating charted features with those you can identify in your surroundings.

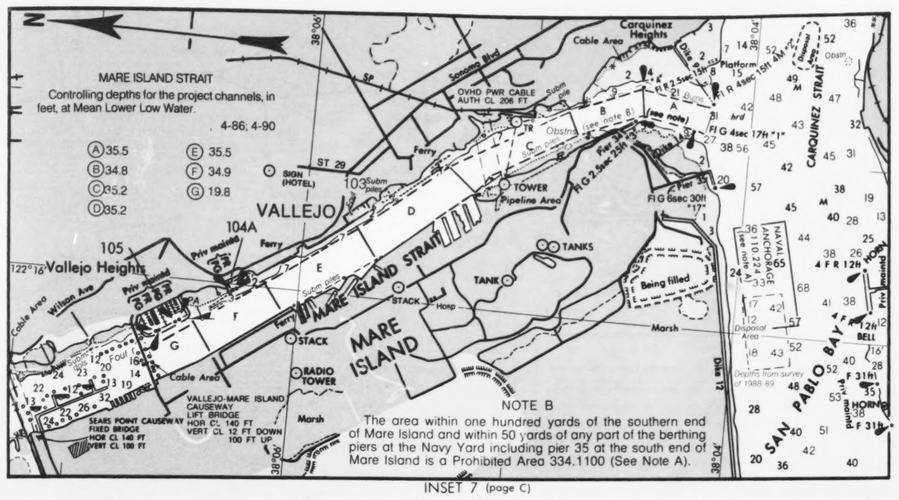
RULES OF THE ROAD
(ABRIDGED)

Motorless craft have the right-of-way in almost all cases.
Sailing vessels and motorboats less than sixty-five feet in length, shall not hamper, in a narrow channel, the safe passage of a vessel which can navigate only inside that channel.
A motorboat being overtaken has the right-of-way.
Motorboats approaching head to head or nearly so should pass port to port.
When motorboats approach each other at right angles or obliquely, the boat on the right has the right-of-way in most cases.
Motorboats must keep to the right in narrow channels, when safe and practicable.
Mariners are urged to become familiar with the complete text of the Rules of the Road in U.S. Coast Guard publication "Navigation Rules".



OAKLAND INNER HARBOR

ALCATRAZ LIGHT


MARE ISLAND STRAIT
Controlling depths for the project channels, in feet, at Mean Lower Low Water.
4-86; 4-90
A 35.5
B 34.8
C 35.2
D 35.2
E 35.5
F 34.9
G 19.8
VALLEJO
MARE ISLAND STRAIT
MARE ISLAND
SAN PABLO BAY
CARQUINEZ STRAIT
Vallejo Heights
Carquinez Heights
TANKS
TANK
STACK
RADIO TOWER
SIGN (HOTEL)
OVHD PWR CABLE AUTH CL 206 FT
VALLEJO-MARE ISLAND CAUSEWAY LIFT BRIDGE HOR CL 140 FT VERT CL 12 FT DOWN 100 FT UP
SEARS POINT CAUSEWAY FIXED BRIDGE HOR CL 140 FT VERT CL 100 FT
ANCHORAGE
Being filled
Disposal Area
Pipeline Area
Cable Area
Marsh
Ferry
Platform
Obstn
Subm pipe
Subm cable
Pier
Dolphin
Fog Sig
Bell
Horn
Fl G 4sec 17ft "1"
Fl G 2.5sec 25ft "3"
Fl G 6sec 30ft "17"
4 F R 12ft
F 31ft
Fl R 4sec 15ft "2"
Fl G 2.5sec 25ft "5"
Fl R 2.5sec 25ft "4"
Fl G 2.5sec 25ft "7"
Fl G 2.5sec 25ft "9"
Fl G 2.5sec 25ft "11"
Fl G 2.5sec 25ft "13"
Fl G 2.5sec 25ft "15"
Fl G 2.5sec 25ft "17"
Fl G 2.5sec 25ft "19"
Fl G 2.5sec 25ft "21"
Fl G 2.5sec 25ft

JOINS MONTEZUMA SLOUGH EXTENSION (PAGE D)

JOINS MONTEZUMA SLOUGH EXTENSION (PAGE D) Formerly 1

MONTEZUMA SLOUGH EXTENSION

GRIZZLY ISLAND

GRIZZLY BAY

SUISUN SLOUGH

MONTEZUMA SLOUGH

GENERAL ANCHORAGE 110.224 (see note A)

SIMMONS ISLAND

SUISUN CUTOFF

RYER ISLAND

ROE ISLAND

SUISUN BAY

Middle Ground

ROE ISLAND CHANNEL

PORT CHICAGO REACH

WEST REACH

EAST REACH

NAVAL WEAPONS STATION

RESTRICTED AREA 334.1110 (see note A)

Seal Islands

Seal Islands Channel

Hastings Slu

Pt Buckler

Pelican Pt

Corner Pt

Preston Pt

Gillespie Pt

Pt Edith

Pt Edith Reef

Dutton Ldg

Pt Pablo Pt

Pt Pablo Reef

Pt Pablo Bar

Freeman I

DUTTON I

WHEELER ISLAND

HONKER BAY

Roaring River Slough

Harvard Slough

Champion Slough

Noyce Slough

Northwr Slough

Rock Creek

Meins Lan

Pipeline Area

HAMMOND

CHIPPS ISL

Simmons Pt

Stake Pt

Mallard Slu

Mallard I

Ruins

Chipps

Marsh

Numerous marsh islets

Landing

Snag PA

Piles PA

Pile PA

Subm pile

Subm piles PA

Platform

Dolphin

Stakes

Piles

Snag

Foul

Sign PA

Tripod

Barge pier

Floppole

Tower

Sewer PA

Pipeline Area

Cable Area

(see note B)

RESERVE FLEET 1.62.270 27 (see note A)

Fl R 4sec 15ft 3M"6" 2·5 Ra Ref

Fl G 4sec 15ft 3M"9" Ra Ref

Fl R 4sec 15ft 3M"10" Ra Ref

Fl R 4sec 15ft 3M"16" Ra Ref

Fl G 4sec 15ft 3M"13" Ra Ref

Fl G 4sec 15ft 3M"16" Ra Ref

Iso 6s 31ft

Priv maintd Ok Fl 23ft

Fl R 2·5sec 20ft 4M "28"

Fl G 6sec 10ft 5M "1"

Priv maintd PA

Fl G 4s 20ft 4M Ra Ref

Middle Pt 4sec 20ft Ra Ref

Shoal rep 1977

Shoal rep 1981

Shoal rep 1990

Shoal rep 1989

Wrecks rep 1981

Obstr rep 1982

Dredged 31ft

Dredged 30ft

Dredging Approved Survey as of Feb Mar 1989

Fine (Shoaling) 27 (1981) SHOALING

LAST SURVEY 1990

Pipeline Area

Cable Area

Being filled

Tanks

Dike

Pier Ruins

Barge pier

Floppole

Sewer PA

Subm pile

Subm piles PA

Platform

Dolphin

Stakes

Piles

Snag

Foul

Sign PA

Tripod

Barge pier

Floppole

Tower

Sewer PA

Pipeline Area

Cable Area

Being filled

Tanks

Dike

Pier Ruins

Marsh

Mud

hrd

stk

Wks

Ruins

Dot

Waterfront Rd

Port Chicago Hwy

Contra Costa Canal

Arnold Industrial Hwy

Willow Pass Rd

McAvoy

Shore Acres

West Pittsburg

Avon

Avon Pier

Pacheco Creek

OVHD PWR CAB

TANK

MAGNETIC

VAR 16°15'E (1990)

NO ANNUAL CHANGE

SCALE 1:40,000

NAUTICAL MILES

STATUTE MILES

YARDS

LATITUDE

LONGITUDE

U.S. DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRA

NATIONAL OCEAN SERVICE

JOINS PAGE C

18652 27th Ed., Aug. 18/90

SUISUN BAY AND SAN JOAQUIN RIVER

TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO MAR 1990

CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)					PROJECT DIMENSIONS		
NAME OF CHANNEL	LEFT OUTSIDE QUARTER	MIDDLE HALF OF CHANNEL	RIGHT OUTSIDE QUARTER	DATE OF SURVEY	WIDTH (FEET)	LENGTH (NAUT. MILES)	DEPTH MLLW (FEET)
SUISUN PT. REACH	43.1	42.7	44.1	2,3-90	300	0.8	35
BULLS HEAD CHANNEL	35.2	34.0	33.5	2,3-90	300-350	1.2	35
EAST BULLS HEAD CHANNEL	33.8	34.8	33.8	2,3-90	350	1.1	35
PT. EDITH CROSSING RANGE	34.8	34.6	27.1	2,3-90	350	1.1	35
PRESTON PT. REACH	32.7	36.6	31.3	2,3-90	350	0.9	35
ROE ISLAND CHANNEL	28.6	33.2	32.4	2,3-90	350	1.1	35
PORT CHICAGO REACH	37.0	37.0	35.2	2,3-90	350	0.52	35
MIDDLE GROUND CHANNEL							
WEST REACH	36.0	36.1	36.2	2,3-90	350	1.29	35
EAST REACH	35.0	37.1	31.5	2,3-90	350	1.09	35
NEW YORK SLOUGH							
WEST REACH	30.4	34.4	31.8	2,3-90	400	1.3	35
EAST REACH	30.8	34.8	31.4	2,3-90	400	1.7	35
SAN JOAQUIN RIVER							
ANTIOCH REACH	32.9	34.5	30.8	5-89	400	3.3	35

NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION

PRODUCED BY COMPUTER ASSISTED METHODS

NOTE B

CAUTION

Mariners are warned that numerous uncharted piles, snags, pipes, shoals, obstructions, and wrecks, some submerged, may exist along the edges of the waterways.

CAUTION

Only marine radiobeacons have been calibrated for surface use. Limitations on the use of certain other radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and Defense Mapping Agency Publication 117.

Radio direction-finder bearings to commercial broadcasting stations are subject to error and should be used with caution.

Station positions are shown thus:

○ (Accurate location) o (Approximate location)

BRIDGE AND OVERHEAD CABLE CLEARANCES

Clearances are charted as furnished by the Corps of Engineers. Overhead cable clearances are referred to high water. Bridge clearances are referred to High Water (HW) and Low Water (LW).

COURSES

Courses are TRUE and must be CORRECTED for any variation and compass deviation.

SCALE 1:40,000

NAUTICAL MILES

STATUTE MILES

YARDS

LATITUDE

LONGITUDE

MAGNETIC

VAR 16°15'E (1990)

NO ANNUAL CHANGE

SACRAMENTO RIVER DEEP WATER SHIP CHANNEL

162.205 (see note A)

Controlling depth for a width of 200 feet was 28.5 feet from channel entrance (38°03'50"N., 121°51'09"W.) to Lt "40" thence 30.3 feet to Lt "52", thence 28.4 feet to Lt "60" thence 27.1 feet to Lt "70" thence 22.8 feet to Lt "86" and 30.5 feet in the turning basin at West Sacramento.

May - June 1989

Sacramento River Deep Water Ship Channel lights are equipped with Radar Reflectors.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notices to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Long Beach, California, or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.

Refer to charted regulation section numbers.

CAUTION

The river between West I. and the south shore contains many submerged mooring piles approximately even with the bottom.

SAN JOAQUIN RIVER

STOCKTON DEEP WATER CHANNEL

(Use Chart 18661)

JOINS CHART 18661

121°48′ 121°46′ 121°44′ 38°08′ 38°06′ 38°04′ 121°54′ 121°52′ 121°50′

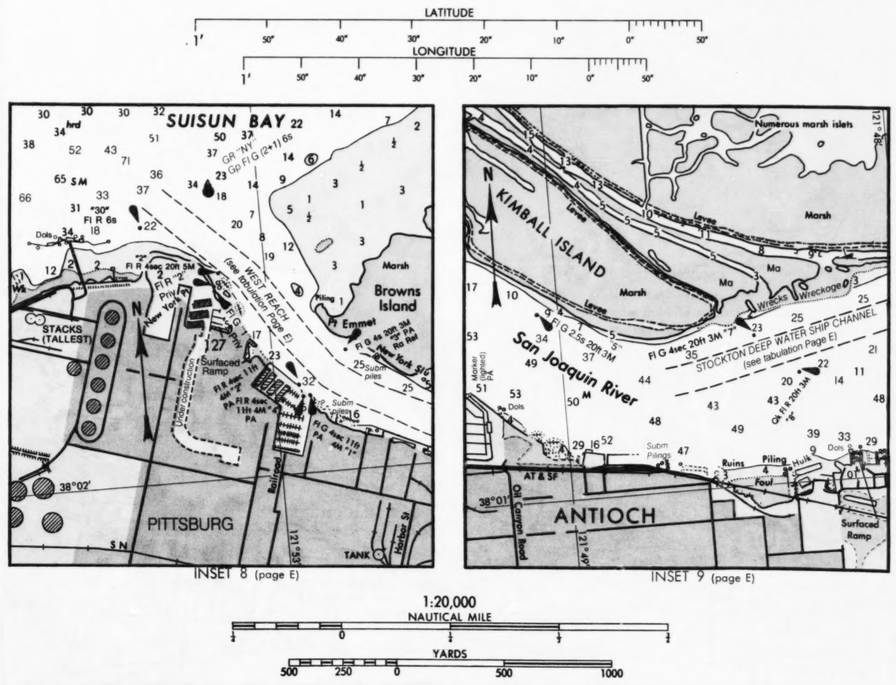
PAGE E

18652

TIDAL CURRENT DATA

PLACE	POSITION		MAXIMUM CURRENTS			
			Flood		Ebb	
	Lat.	Long.	Direction (true)	Average velocity	Direction (true)	Average velocity
	°′ N.	°′ W.	deg.	knots	deg.	knots
GOLDEN GATE and APPROACHES[1]						
Point Lobos, 2.5 miles west of[2]	37 46	122 34	80	0.9	270	1.7
South Channel	37 45	122 32	25	1.2	180	1.4
Bonita Channel, off Tennessee Cove[2]	37 50	122 34	110	1.1	325	0.8
Bonita Channel, off Point Bonita	37 49	122 32	115	1.3	355	0.3
Pt. Bonita-Pt. Lobos, midway between	37 48	122 31	45	2.3	225	2.6
Point Diablo, 0.2 mile SE. of	37 49	122 30	80	1.8	265	3.0
SAN FRANCISCO BAY ENTRANCE	37 49	122 29	65	2.9	245	3.4
Golden Gate Bridge, 0.8 mile east of	37 49	122 28	70	2.5	255	2.3
SAN FRANCISCO BAY, South						
Alcatraz Island, 0.2 mile west of	37 50	122 26	70	2.3	265	2.1
Alcatraz Island, south of	37 49	122 25	95	1.5	285	1.9
Alcatraz Island, 0.8 mile east of	37 50	122 24	135	1.1	315	2.1
Treasure Island, 0.8 mile west of	37 49	122 24	150	1.2	335	2.5
Treasure Island, 0.2 mile west of	37 49	122 23	170	1.3	345	1.9
Yerba Buena Island, west of	37 49	122 23	170	1.4	315	2.5
San Francisco-Oakland Bay Bridge[3]						
Treasure Island, 0.5 mile north of	37 50	122 22	120	1.1	305	1.2
Treasure Island, 0.3 mile east of	37 50	122 21	140	1.4	325	1.5
Yerba Buena Island, 0.3 mile south of	37 48	122 22	140	1.5	345	2.2
Oakland Outer Harbor entrance	37 48	122 21	170	1.6	335	1.7
Oakland Inner Harbor entrance	37 48	122 20	180	1.0	340	1.5
Oakland Inner Harbor channel	37 48	122 19	120	0.5	300	0.7
Oakland Harbor, Webster Street	37 48	122 16	120	0.9	300	1.0
Oakland Harbor, High Street Bridge	37 46	122 13	150	1.4	330	1.4
Rincon Point, 0.5 mile east of	37 47	122 22	180	2.0	340	2.4
Rincon Point, midbay	37 47	122 21	165	2.1	320	2.1
Mission Rock, 0.6 mile east of	37 46	122 22	160	2.5	320	2.3
Mission Rock, 1.3 miles east of	37 47	122 21	180	2.1	345	2.0
Mission Rock, 2 miles east of	37 47	122 20	140	1.7	330	2.3
Potrero Point, 2 miles east of	37 45	122 20	160	1.6	330	1.6
Point Avisadero, 0.3 mile east of	37 44	122 21	155	1.6	335	1.9
Point Avisadero, 1 mile east of	37 44	122 20	155	1.6	350	1.5
Point Avisadero, 2 miles east of	37 44	122 19	150	1.5	335	1.6
Sierra Point, 1.3 miles ENE. of	37 41	122 22	180	1.0	5	1.0
Oyster Point, 2.8 miles east of	37 40	122 19	170	1.0	345	1.2
Sierra Point, 4.4 miles east of	37 40	122 18	150	1.0	330	0.8
San Mateo Bridge	37 35	122 15	140	1.5	310	1.5
Dumbarton Bridge	37 31	122 07	150	1.5	340	1.1
Dumbarton Point, 2.2 miles SE. of	37 28	122 04	125	1.2	300	1.1
SAN FRANCISCO BAY, North						
Yellow Bluff, 0.8 mile east of	37 50	122 27	20	2.9	255	2.3
Point Cavallo, 1.3 miles east of	37 50	122 27	85	2.4	255	2.6
Alcatraz Island, 0.5 mile north of[4]	37 50	122 25	65	1.8	285	2.4
Pt. Blunt, Angel I., 0.8 mile S. of	37 51	122 25	105	1.7	260	2.2
Pt. Blunt, Angel I., 0.8 mile SE. of[4]	37 51	122 24	85	1.0	295	1.3
Angel Island, off Quarry Point	37 52	122 25	25	0.5	130	1.9
Angel Island, 0.8 mile east of	37 52	122 24	350	1.1	190	0.9
Angel Island, Pt. Knox, 1 mile SW. of	37 50	122 27	35	2.2	255	1.7
Richardson Bay entrance	37 51	122 28	75	0.9	225	0.5
Raccoon Strait, off Point Stuart	37 52	122 27	15	1.3	225	1.9
Raccoon Strait, off Hospital Cove	37 52	122 26	35	1.5	225	1.6
Bluff Point, 0.1 mile east of	37 53	122 26	10	1.7	145	1.9
Southampton Shoal Lt., 0.2 mi. E. of	37 53	122 24	20	0.9	190	1.1
Point Chauncey, 1.3 miles east of	37 54	122 25	340	1.3	160	1.4
Point Richmond, 0.5 mile west of	37 54	122 24	330	0.8	140	0.9
Red Rock, east of	37 56	122 26	320	1.3	175	1.4
Point San Quentin, 1.9 miles east of	37 57	122 26	15	1.4	170	2.1
SAN PABLO BAY						
Point San Pablo, midchannel	37 58	122 26	15	1.8	180	2.2
Pinole Point, 1.2 miles off	38 02	122 23	40	1.3	235	1.6
Petaluma River approach	38 04	122 25	20	0.6	185	0.7
Petaluma River entrance	38 07	122 30	295	1.2	90	1.0
Davis Point, midchannel	38 04	122 16	90	1.6	250	2.1
CARQUINEZ STRAIT						
Mare Island Strait ent., between dikes	38 04	122 15	40	1.3	210	1.7
Mare Island Strait, off South Vallejo	38 05	122 15	325	1.4	165	1.8
Crockett	38 04	122 13	125	2.2	275	2.7
Benicia, south of	38 02	122 08	80	1.9	260	2.2
SUISUN BAY						
Roe Island, south of	38 04	122 02	90	1.3	270	1.7
Chipps Island, south of	38 03	121 55	90	2.2	270	2.2
Suisun Slough entrance	38 07	122 04	290	1.2	110	1.3
Montezuma Slough, west entrance	38 08	122 03	355	1.4	175	1.4
Between Roe Island and Ryer Island	38 04	122 01	115	1.3	295	1.6
Suisun Cutoff	38 05	122 00	120	1.6	300	1.8
Spoonbill Creek, near bridge	38 04	121 54	105	1.5	285	1.3
Montezuma Slough, E. end, near bridge	38 05	121 53	135	1.0	315	1.2
New York Slough	38 02	121 52	110	1.2	295	1.3
SACRAMENTO RIVER†						
Entrance, 0.7 mile SW. of Chain I	38 03	121 52	55	1.2	210	1.3
Point Sacramento, 0.3 mile NE. of	38 04	121 50	100	1.1	285	0.8
SAN JOAQUIN RIVER†						
Point Beanar, 0.8 mile north of	38 03	121 50	155	1.0	355	1.4
Antioch Point, 0.3 mile east of	38 02	121 49	130	1.5	305	1.4
West Island Light, 0.5 mile SE. of	38 01	121 46	90	0.4	270	0.7

[1] Large current eddies which cause ships to sheer off course are reported near the foundation piers of Golden Gate Bridge and San Fransisco-Oakland Bay Bridge.
[2] Current is somewhat rotary, turning clockwise.
[3] Current is somewhat rotary, turning counterclockwise.
† Data do not apply during freshets.



SAN FRANCISCO (Golden Gate), CALIFORNIA, 1992

Predicted times and heights of high and low water-Pacific Standard Time. For Daylight Saving time, add 1 hour.
To predict local tide, apply the time difference listed in the facility tabulations to these tide predictions.

DECEMBER 1990

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0318	2.8	16	0009	4.7
Sa	0938	7.1	Su	0409	3.4
	1631	-1.6		1008	6.2
	2354	5.0		1707	-0.5
2	0406	3.0	17	0047	4.8
Su	1023	7.3	M	0448	3.5
	1717	-1.8		1040	6.2
				1741	-0.5
3	0047	5.1	18	0119	4.7
M	0459	3.1	Tu	0525	3.5
	1112	7.3		1116	6.1
	1806	-1.7		1813	-0.5
4	0139	5.2	19	0155	4.7
Tu	0551	3.0	W	0601	3.5
	1203	7.0		1154	5.9
	1857	-1.5		1847	-0.5
5	0232	5.2	20	0230	4.7
W	0651	3.2	Th	0643	3.5
	1257	6.6		1230	5.6
	1948	-1.1		1924	-0.3
6	0320	5.2	21	0302	4.8
Th	0758	3.1	F	0729	3.4
	1354	6.0		1312	5.3
	2039	-0.6		1958	-0.1
7	0412	5.3	22	0334	4.9
F	0918	2.9	Sa	0833	3.2
	1457	5.5		1358	4.8
	2132	0.0		2036	0.3
8	0458	5.5	23	0409	5.1
Sa	1039	2.5	Su	0936	2.8
	1612	4.6		1456	4.4
	2225	0.6		2118	0.8
9	0547	5.6	24	0444	5.4
Su	1211	2.1	M	1004	2.3
	1735	4.1		1615	3.9
	2320	1.3		2203	1.3
10	0629	5.8	25	0523	5.7
M	1301	1.3	Tu	1152	1.6
	1900	3.9		1755	3.7
				2259	1.9
11	0012	1.8	26	0603	6.1
Tu	0710	6.0	W	1253	0.8
	1356	0.8		1937	3.8
	2031	4.0		2359	2.5
12	0105	2.3	27	0648	6.4
W	0749	6.1	Th	1349	0.0
	1442	0.3		2105	4.1
	2142	4.2			
13	0157	2.8	28	0104	2.9
Th	0824	6.2	F	0738	6.8
	1525	0.0		1441	-0.7
	2238	4.4		2207	4.5
14	0243	3.1	29	0203	3.1
F	0857	6.2	Sa	0828	7.1
	1600	-0.3		1531	-1.2
	2327	4.6		2301	4.8
15	0328	3.3	30	0302	3.2
Sa	0932	6.2	Su	0921	7.3
	1635	-0.4		1619	-1.6
				2346	5.1
			31	0355	3.1
			M	1013	7.4
				1708	-1.7

JANUARY 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0029	5.3	16	0041	4.8
Tu	0454	2.9	W	0506	3.0
	1104	7.2		1105	6.1
	1752	-1.6		1748	-0.5
2	0113	5.4	17	0106	4.8
W	0547	2.7	Th	0544	2.8
	1155	6.9		1140	5.9
	1838	-1.3		1817	-0.4
3	0154	5.5	18	0135	4.9
Th	0645	2.5	F	0625	2.6
	1248	6.3		1219	5.5
	1921	-0.9		1849	-0.2
4	0236	5.5	19	0203	5.1
F	0745	2.3	Sa	0707	2.4
	1342	5.6		1302	5.1
	2003	-0.2		1921	0.2
5	0318	5.6	20	0230	5.3
Sa	0853	2.1	Su	0800	2.2
	1442	4.9		1349	4.7
	2046	0.5		1955	0.7
6	0400	5.7	21	0304	5.5
Su	1002	1.9	M	0856	1.9
	1551	4.2		1451	4.2
	2133	1.2		2032	1.4
7	0443	5.8	22	0341	5.7
M	1117	1.6	Tu	1003	1.5
	1719	3.8		1613	3.8
	2225	2.0		2119	2.0
8	0529	5.9	23	0426	6.0
Tu	1227	1.2	W	1113	1.0
	1904	3.7		1803	3.7
	2324	2.6		2218	2.7
9	0615	5.9	24	0517	6.2
W	1325	0.8	Th	1223	0.5
	2035	3.9		1950	3.9
				2330	3.1
10	0027	3.0	25	0617	6.5
Th	0659	6.0	F	1329	-0.1
	1430	0.5		2105	4.3
	2140	4.2			
11	0129	3.3	26	0050	3.3
F	0745	6.1	Sa	0719	6.7
	1500	0.2		1427	-0.6
	2227	4.5		2158	4.6
12	0224	3.4	27	0159	3.2
Sa	0828	6.2	Su	0818	7.0
	1539	-0.1		1519	-1.1
	2309	4.6		2243	4.9
13	0313	3.3	28	0258	2.9
Su	0912	6.2	M	0913	7.1
	1616	-0.3		1607	-1.3
	2341	4.7		2322	5.2
14	0352	3.3	29	0353	2.6
M	0951	6.3	Tu	1006	7.0
	1647	-0.4		1651	-1.4
15	0013	4.8	30	0000	5.3
Tu	0443	3.1	W	0447	2.2
	1027	6.2		1058	6.8
	1719	-0.5		1732	-1.2
			31	0039	5.5
			Th	0539	1.9
				1150	6.4
				1812	-0.8

FEBRUARY 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0114	5.6	16	0042	5.2
F	0629	1.6	Sa	0603	1.6
	1239	5.8		1215	5.3
	1851	-0.3		1815	0.3
2	0150	5.7	17	0110	5.4
Sa	0721	1.5	Su	0645	1.3
	1331	5.2		1302	4.9
	1930	0.4		1847	0.8
3	0225	5.7	18	0140	5.6
Su	0817	1.4	M	0731	1.0
	1428	4.6		1355	4.5
	2008	1.2		1923	1.4
4	0303	5.7	19	0214	5.8
M	0919	1.3	Tu	0827	0.8
	1535	4.0		1502	4.1
	2047	1.9		2005	2.0
5	0343	5.7	20	0253	5.9
Tu	1022	1.3	W	0929	0.7
	1702	3.7		1626	3.9
	2139	2.6		2053	2.6
6	0425	5.7	21	0344	6.1
W	1134	1.2	Th	1041	0.5
	1854	3.7		1811	3.8
	2245	3.1		2159	3.1
7	0515	5.6	22	0445	6.1
Th	1243	1.0	F	1157	0.2
	2027	3.9		1944	4.1
				2329	3.3
8	0001	3.4	23	0554	6.2
F	0613	5.7	Sa	1309	-0.2
	1341	0.7		2043	4.4
	2122	4.2			
9	0111	3.4	24	0051	3.2
Sa	0709	5.7	Su	0703	6.3
	1431	0.4		1409	-0.5
	2201	4.4		2132	4.7
10	0207	3.3	25	0200	2.8
Su	0802	5.8	M	0810	6.4
	1513	0.1		1500	-0.8
	2236	4.6		2211	5.0
11	0255	3.1	26	0257	2.3
M	0850	5.9	Tu	0909	6.4
	1548	-0.1		1546	-0.9
	2301	4.6		2249	5.2
12	0334	2.8	27	0351	1.7
W	0932	6.0	W	1004	6.3
	1620	-0.3		1627	-0.7
	2327	4.7		2325	5.4
13	0414	2.5	28	0438	1.2
W	1014	5.9	Th	1056	6.0
	1650	-0.4		1705	-0.5
	2352	4.8		2357	5.6
14	0446	2.2			
Th	1053	5.8			
	1718	-0.3			
15	0017	5.0			
F	0525	1.9			
	1132	5.6			
	1746	-0.1			

MARCH 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0525	0.9	16	0503	5.2
F	1145	5.7	Sa	1141	5.2
	1743	0.0		1711	0.4
				2349	5.8
2	0029	5.6	17	0545	5.2
Sa	0610	0.6	Su	1213	5.2
	1235	5.2		1743	0.8
	1815	0.6			
3	0100	5.7	18	0021	5.7
Su	0655	0.6	M	0626	5.2
	1326	4.8		1313	4.9
	1854	1.2		1818	1.4
4	0132	5.7	19	0053	5.5
M	0741	0.6	Tu	0732	5.2
	1421	4.3		1409	4.8
	1929	1.9		1900	1.9
5	0205	5.6	20	0134	6.0
Tu	0833	0.7	W	0808	5.3
	1525	4.0		1520	4.5
	2011	2.5		1942	2.6
6	0239	5.5	21	0218	6.2
W	0929	0.9	Th	0907	5.6
	1649	3.8		1640	4.2
	2100	3.0		2048	3.2
7	0323	5.4	22	0317	5.9
Th	1034	1.0	F	1019	6.1
	1834	3.3		1759	4.3
	2216	3.3		2209	3.7
8	0418	5.2	23	0424	5.8
F	1144	0.9	Sa	1132	6.1
	1954	4.0		1919	4.3
	2339	3.4		2346	3.4
9	0524	5.2	24	0542	5.7
Sa	1250	0.8	Su	1243	6.0
	2040	4.2		2011	4.1
10	0053	3.3	25	0058	5.6
Su	0630	5.2	M	0656	5.6
	1346	0.8		1343	5.8
	2119	4.3		2056	3.8
11	0146	2.9	26	0202	5.5
M	0732	5.3	Tu	0807	5.6
	1428	0.3		1434	5.8
	2145	4.5		2134	3.6
12	0235	2.5	27	0255	5.5
Tu	0824	5.3	W	0906	5.5
	1507	0.1		1505	5.6
	2209	4.6		2213	3.5
13	0313	2.1	28	0344	5.4
W	0913	5.4	Th	1005	5.4
	1540	0.0		1554	5.4
	2234	4.8		2242	3.6
14	0349	1.6	29	0427	5.3
Th	0958	5.3	F	1057	5.3
	1611	0.1		1633	5.3
	2259	5.0		2313	3.7
15	0427	1.1	30	0509	5.4
F	1044	5.2	Sa	1146	5.4
	1640	0.3		1713	5.3
	2324	5.2		2343	3.7
			31	0548	5.5
			Su	1239	5.5
				1746	5.3

AUGUST 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0233	4.2	16	0445	3.9
Th	0810	1.4	F	0923	2.6
	1514	5.6		1605	5.8
	2131	1.5		2308	1.0
2	0345	3.8	17	0627	3.9
F	0852	2.1	Sa	1029	3.1
	1555	5.8		1657	5.7
	2237	1.1			
3	0523	3.6	18	0017	0.9
Sa	0945	2.6	Su	0756	4.1
	1645	6.1		1148	3.4
	2349	0.7		1757	5.7
4	0712	3.8	19	0119	0.7
Su	1057	3.1	M	0856	4.4
	1740	6.3		1258	3.4
				1852	5.8
5	0054	0.1	20	0212	0.5
M	0834	4.1	Tu	0941	4.5
	1213	3.3		1356	3.2
	1842	6.5		1949	5.8
6	0154	-0.4	21	0254	0.3
Tu	0928	4.5	W	1013	4.7
	1327	3.2		1442	3.0
	1945	6.8		2037	5.9
7	0250	-0.9	22	0331	0.1
W	1013	4.8	Th	1045	4.7
	1427	2.9		1524	2.7
	2044	6.9		2119	5.9
8	0337	-1.2	23	0403	0.0
Th	1054	5.0	F	1110	4.8
	1527	2.5		1600	2.4
	2142	7.0		2201	5.8
9	0423	-1.3	24	0433	0.0
F	1133	5.2	Sa	1135	4.9
	1619	2.1		1636	2.1
	2235	6.8		2240	5.6
10	0505	-1.1	25	0500	0.1
Sa	1209	5.4	Su	1157	5.0
	1712	1.7		1711	1.8
	2327	6.5		2318	5.4
11	0547	-0.8	26	0530	0.3
Su	1247	5.6	M	1219	5.2
	1806	1.3		1747	1.5
12	0019	6.0	27	0000	5.2
M	0628	-0.2	Tu	0559	0.7
	1323	5.8		1246	5.4
	1855	1.1		1826	1.3
13	0115	5.4	28	0046	4.9
Tu	0707	0.4	W	0627	1.1
	1358	5.9		1314	5.6
	1953	1.0		1909	1.1
14	0214	4.8	29	0138	4.6
W	0745	1.2	Th	0659	1.7
	1438	5.9		1345	5.8
	2053	1.0		2000	0.9
15	0321	4.3	30	0239	4.3
Th	0831	1.9	F	0738	2.3
	1519	5.9		1425	5.9
	2155	1.0		2059	0.8
			31	0359	4.0
			Sa	0823	2.8
				1512	6.0
				2205	0.6

SEPTEMBER 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0535	4.0	16	0727	4.3
Su	0926	3.2	M	1136	3.6
	1610	6.1		1711	5.3
	2320	0.4			
2	0708	4.2	17	0029	0.9
M	1055	3.5	Tu	0820	4.5
	1718	6.2		1243	3.3
				1817	5.3
3	0030	0.1	18	0124	0.7
Tu	0812	4.5	W	0855	4.6
	1219	3.3		1338	3.0
	1830	6.3		1919	5.3
4	0133	-0.3	19	0210	0.6
W	0859	4.8	Th	0924	4.7
	1330	2.9		1422	2.6
	1939	6.4		2011	5.3
5	0228	-0.5	20	0247	0.5
Th	0941	5.1	F	0949	4.9
	1427	2.3		1503	2.1
	2039	6.4		2100	5.3
6	0315	-0.6	21	0321	0.4
F	1016	5.3	Sa	1011	5.0
	1521	1.7		1539	1.6
	2137	6.4		2145	5.3
7	0356	-0.5	22	0351	0.5
Sa	1051	5.6	Su	1035	5.2
	1613	1.2		1614	1.2
	2233	6.2		2231	5.2
8	0438	-0.2	23	0419	0.8
Su	1127	5.8	M	1100	5.4
	1658	0.7		1650	0.8
	2325	5.8		2316	5.1
9	0517	0.2	24	0451	1.1
M	1159	5.8	Tu	1125	5.6
	1747	0.4		1725	0.4
10	0018	5.4	25	0003	4.9
Tu	0553	0.8	W	0523	1.5
	1233	6.0		1154	5.8
	1836	0.3		1804	0.2
11	0113	5.0	26	0053	4.8
W	0634	1.5	Th	0555	2.0
	1308	6.0		1226	6.0
	1921	0.4		1849	0.0
12	0211	4.6	27	0149	4.6
Th	0713	2.1	F	0631	2.5
	1344	5.9		1302	6.1
	2014	0.5		1937	0.0
13	0318	4.3	28	0254	4.4
F	0758	2.7	Sa	0713	3.0
	1423	5.7		1348	6.1
	2109	0.7		2033	0.0
14	0439	4.2	29	0410	4.3
Sa	0854	3.2	Su	0811	3.3
	1509	5.6		1444	6.0
	2215	0.9		2139	0.1
15	0609	4.2	30	0533	4.4
Su	1010	3.5	M	0931	3.5
	1605	5.4		1547	5.9
	2324	1.0		2252	0.1

OCTOBER 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0642	4.6	16	0721	4.6
Tu	1107	3.4	W	1221	3.2
	1703	5.8		1727	4.7
2	0003	0.0	17	0025	0.9
W	0738	4.9	Th	0753	4.7
	1227	2.9		1314	2.7
	1821	5.7		1836	4.6
3	0105	0.0	18	0112	0.9
Th	0823	5.2	F	0823	4.9
	1331	2.3		1359	2.1
	1931	5.7		1942	4.6
4	0158	0.0	19	0154	0.9
F	0900	5.4	Sa	0849	5.1
	1427	1.5		1437	1.5
	2037	5.6		2041	4.7
5	0244	0.2	20	0230	1.1
Sa	0937	5.7	Su	0911	5.4
	1519	0.8		1513	0.9
	2140	5.5		2135	4.

SAN FRANCISCO (Golden Gate), CALIFORNIA, 1992

Predicted times and heights of high and low water-Pacific Standard Time. For Daylight Saving time, add 1 hour.
To predict local tide, apply the time difference listed in the facility tabulations to these tide predictions.

APRIL 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0012	5.6	16	0608	-1.1
M	0630	-0.2	Tu	1321	4.6
	1329	4.4		1759	2.3
	1820	2.1			
2	0041	5.6	17	0019	6.2
Tu	0709	-0.1	W	0657	-1.1
	1421	4.2		1422	4.5
	1900	2.6		1845	2.7
3	0113	5.4	18	0104	6.2
W	0754	0.1	Th	0751	-1.0
	1521	4.0		1525	4.4
	1942	3.0		1942	3.0
4	0148	5.3	19	0158	6.0
Th	0843	0.3	F	0851	-0.8
	1633	3.9		1635	4.4
	2035	3.3		2053	3.1
5	0233	5.1	20	0258	5.7
F	0939	0.5	Sa	0957	-0.6
	1753	3.9		1741	4.5
	2154	3.4		2220	3.0
6	0329	4.9	21	0411	5.4
Sa	1043	0.6	Su	1103	-0.3
	1902	4.0		1840	4.7
	2318	3.3		2345	2.5
7	0435	4.7	22	0530	5.0
Su	1149	0.6	M	1206	-0.1
	1943	4.2		1928	5.0
8	0025	3.0	23	0057	1.9
M	0545	4.6	Tu	0648	4.8
	1243	0.5		1305	0.1
	2015	4.3		2012	5.3
9	0122	2.5	24	0156	1.2
Tu	0653	4.5	W	0802	4.7
	1332	0.5		1354	0.4
	2041	4.5		2049	5.5
10	0207	1.9	25	0248	0.5
W	0756	4.6	Th	0908	4.6
	1411	0.5		1439	0.7
	2108	4.8		2124	5.7
11	0247	1.3	26	0333	0.0
Th	0854	4.6	F	1009	4.5
	1449	0.6		1521	1.1
	2134	5.0		2158	5.8
12	0326	0.7	27	0415	-0.4
F	0948	4.7	Sa	1104	4.5
	1525	0.8		1600	1.6
	2202	5.3		2227	5.6
13	0405	0.1	28	0454	-0.6
Sa	1039	4.7	Su	1154	4.5
	1601	1.1		1639	2.0
	2231	5.6		2259	5.8
14	0443	-0.5	29	0529	-0.7
Su	1131	4.7	M	1244	4.4
	1636	1.5		1717	2.4
	2303	5.9		2327	5.7
15	0525	-0.9	30	0605	-0.7
M	1225	4.7	Tu	1332	4.4
	1717	1.9		1756	2.6
	2338	6.1		2358	5.6

MAY 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0643	-0.5	16	0645	-1.7
W	1422	4.3	Th	1420	4.8
	1835	3.0		1833	2.9
2	0033	5.4	17	0048	6.4
Th	0724	-0.3	F	0737	-1.5
	1512	4.2		1517	4.8
	1920	3.2		1939	2.9
3	0109	5.2	18	0144	6.0
F	0808	-0.1	Sa	0833	-1.1
	1608	4.1		1613	4.9
	2013	3.4		2053	2.8
4	0154	5.0	19	0246	5.5
Sa	0856	0.1	Su	0931	-0.7
	1700	4.1		1705	5.0
	2123	3.3		2217	2.5
5	0246	4.7	20	0356	4.9
Su	0947	0.3	M	1028	-0.2
	1749	4.2		1754	5.2
	2240	3.1		2335	2.0
6	0345	4.4	21	0515	4.4
M	1043	0.4	Tu	1127	0.3
	1827	4.3		1842	5.4
	2351	2.7			
7	0454	4.1	22	0045	1.3
Tu	1137	0.6	W	0641	4.1
	1902	4.6		1220	0.8
				1925	5.7
8	0050	2.1	23	0146	0.6
W	0614	3.9	Th	0802	4.0
	1226	0.8		1311	1.3
	1933	4.8		2004	5.8
9	0136	1.4	24	0236	0.1
Th	0728	3.9	F	0914	4.0
	1312	1.0		1400	1.7
	2004	5.2		2041	5.9
10	0219	0.7	25	0321	-0.4
F	0839	4.0	Sa	1017	4.2
	1354	1.3		1449	2.1
	2036	5.5		2116	6.0
11	0301	0.0	26	0400	-0.6
Sa	0942	4.2	Su	1110	4.3
	1439	1.6		1531	2.5
	2110	5.9		2149	6.0
12	0340	-0.7	27	0438	-0.8
Su	1042	4.4	M	1201	4.4
	1524	2.0		1613	2.8
	2147	6.2		2222	5.9
13	0422	-1.2	28	0514	-0.8
M	1138	4.6	Tu	1246	4.4
	1606	2.3		1655	3.0
	2226	6.4		2254	5.8
14	0509	-1.6	29	0546	-0.8
Tu	1230	4.7	W	1329	4.4
	1652	2.6		1734	3.2
	2309	6.6		2329	5.7
15	0556	-1.8	30	0623	-0.7
W	1324	4.7	Th	1408	4.4
	1741	2.8		1816	3.3
	2355	6.6			
			31	0004	5.5
			F	0700	-0.6
				1447	4.4
				1859	3.3

JUNE 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0043	5.3	16	0132	5.9
Sa	0737	-0.4	Su	0811	-1.0
	1525	4.4		1534	5.3
	1948	3.3		2043	2.3
2	0125	5.0	17	0233	5.3
Su	0817	-0.2	M	0900	-0.4
	1604	4.4		1619	5.4
	2048	3.1		2200	2.0
3	0211	4.6	18	0343	4.6
M	0859	0.1	Tu	0950	0.2
	1639	4.6		1707	5.6
	2159	2.9		2317	1.5
4	0306	4.2	19	0501	4.0
Tu	0942	0.4	W	1042	0.9
	1715	4.8		1751	5.8
	2306	2.4			
5	0415	3.8	20	0026	1.0
W	1031	0.8	Th	0634	3.7
	1750	5.0		1137	1.6
				1835	5.9
6	0005	1.8	21	0125	0.5
Th	0538	3.6	F	0804	3.7
	1121	1.2		1234	2.2
	1829	5.3		1919	6.0
7	0058	1.1	22	0220	0.1
F	0707	3.5	Sa	0919	3.9
	1213	1.7		1328	2.6
	1904	5.7		2000	6.1
8	0149	0.3	23	0306	-0.2
Sa	0835	3.7	Su	1019	4.2
	1304	2.1		1423	2.9
	1947	6.1		2042	6.1
9	0234	-0.4	24	0346	-0.5
Su	0942	4.0	M	1111	4.4
	1400	2.4		1513	3.1
	2029	6.4		2121	6.1
10	0321	-1.1	25	0423	-0.6
M	1044	4.4	Tu	1153	4.5
	1452	2.7		1554	4.5
	2113	6.7		2157	6.1
11	0409	-1.6	26	0457	-0.7
Tu	1136	4.6	W	1231	4.6
	1544	2.8		1637	3.2
	2201	6.9		2235	6.0
12	0455	-1.9	27	0530	-0.7
W	1225	4.8	Th	1307	4.6
	1636	2.9		1717	3.2
	2249	7.0		2306	5.9
13	0544	-2.0	28	0604	-0.6
Th	1314	4.9	F	1339	4.6
	1730	2.8		1753	3.1
	2341	6.8		2342	5.7
14	0632	-1.8	29	0636	-0.6
F	1403	5.0	Sa	1408	4.6
	1828	2.7		1835	3.1
15	0036	6.5	30	0021	5.4
Sa	0721	-1.5	Su	0708	-0.4
	1448	5.1		1438	4.7
	1933	2.6		1918	2.9

JULY 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0103	5.0	16	0221	5.0
M	0740	-0.1	Tu	0822	0.2
	1508	4.8		1531	5.8
	2014	2.7		2132	1.5
2	0145	4.6	17	0331	4.4
Tu	0817	0.3	W	0910	1.0
	1539	5.0		1613	5.9
	2110	2.5		2240	1.2
3	0241	4.2	18	0451	3.9
W	0853	0.7	Th	1002	1.8
	1613	5.2		1700	5.9
	2217	2.1		2353	0.9
4	0349	3.8	19	0632	3.7
Th	0935	1.3	F	1058	2.4
	1650	5.5		1746	6.0
	2320	1.5			
5	0519	3.5	20	0059	0.6
F	1024	1.9	Sa	0805	3.8
	1731	5.8		1203	2.9
				1836	6.0
6	0022	0.9	21	0154	0.4
Sa	0705	3.5	Su	0915	4.1
	1126	2.4		1309	3.2
	1817	6.1		1925	6.0
7	0120	0.2	22	0242	0.1
Su	0834	3.8	M	1009	4.4
	1229	2.8		1405	3.3
	1906	6.5		2013	6.1
8	0213	-0.5	23	0326	-0.1
M	0942	4.2	Tu	1051	4.6
	1334	3.0		1457	3.2
	1959	6.8		2057	6.1
9	0305	-1.1	24	0401	-0.3
Tu	1035	4.5	W	1128	4.6
	1433	3.1		1542	3.1
	2052	7.0		2138	6.1
10	0354	-1.5	25	0437	-0.4
W	1121	4.8	Th	1158	4.7
	1529	2.9		1619	3.0
	2148	7.1		2216	6.0
11	0443	-1.7	26	0506	-0.4
Th	1206	5.0	F	1225	4.7
	1626	2.7		1656	2.8
	2240	7.1		2252	5.9
12	0529	-1.7	27	0535	-0.4
F	1247	5.2	Sa	1252	4.8
	1721	2.4		1734	2.6
	2333	6.8		2330	5.7
13	0612	-1.5	28	0606	-0.3
Sa	1327	5.3	Su	1317	4.8
	1818	2.2		1811	2.5
14	0025	6.4	29	0006	5.4
Su	0657	-1.1	M	0635	0.0
	1409	5.5		1340	5.0
	1916	1.9		1854	2.3
15	0123	5.7	30	0049	5.0
M	0740	-0.5	Tu	0703	0.4
	1448	5.6		1409	5.2
	2019	1.7		1939	2.0
			31	0136	4.6
			W	0736	0.9
				1440	5.4
				2029	1.8

DECEMBER 1991

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0042	1.6	16	0643	5.9
Su	0735	6.3	M	1333	0.8
	1413	0.3		2018	3.8
	2051	4.3			
2	0135	2.1	17	0042	2.6
M	0816	6.4	Tu	0724	6.2
	1501	-0.2		1419	0.1
	2157	4.5		2129	4.1
3	0226	2.5	18	0137	2.9
Tu	0855	6.5	W	0806	6.6
	1543	-0.5		1506	-0.5
	2253	4.7		2228	4.5
4	0311	2.8	19	0229	3.1
W	0931	6.5	Th	0851	6.9
	1622	-0.7		1550	-1.1
	2345	4.8		2316	4.8
5	0358	3.1	20	0321	3.2
Th	1007	6.4	F	0940	7.1
	1701	-0.7		1635	-1.5
6	0031	4.9	21	0002	5.0
F	0442	3.3	Sa	0413	3.1
	1041	6.3		1025	7.2
	1736	-0.7		1720	-1.7
7	0113	4.9	22	0047	5.1
Sa	0521	3.4	Su	0505	3.0
	1116	6.2		1115	7.2
	1810	-0.6		1806	-1.6
8	0152	4.8	23	0132	5.2
Su	0603	3.5	M	0558	2.9
	1151	5.9		1206	6.9
	1847	-0.4		1852	-1.4
9	0230	4.7	24	0215	5.3
M	0645	3.5	Tu	0655	2.7
	1227	5.7		1303	6.4
	1924	-0.2		1938	-1.0
10	0309	4.7	25	0300	5.5
Tu	0732	3.5	W	0801	2.5
	1305	5.3		1401	5.7
	2000	0.1		2027	-0.3
11	0341	4.7	26	0344	5.7
W	0832	3.4	Th	0916	2.2
	1351	4.9		1507	5.0
	2040	0.4		2115	0.4
12	0416	4.8	27	0431	5.9
Th	0937	3.1	F	1033	1.8
	1443	4.4		1624	4.3
	2119	0.8		2208	1.1
13	0451	5.0	28	0517	6.1
F	1047	2.8	Sa	1149	1.3
	1549	4.0		1800	3.9
	2203	1.2		2303	1.8
14	0527	5.3	29	0606	6.2
Sa	1149	2.2	Su	1258	0.7
	1715	3.7		1937	3.9
	2253	1.7			
15	0605	5.5	30	0006	2.4
Su	1245	1.6	M	0653	6.3
	1851	3.6		1357	0.3
	2345	2.2		2100	4.2
			31	0106	2.9
			Tu	0741	6.4
				1449	-0.1

JANUARY 1992

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0205	3.0	16	0112	3.2
W	0827	6.5	Th	0739	6.7
	1533	-0.3		1445	-0.6
	2249	4.7		2213	4.6
2	0300	3.1	17	0215	3.2
Th	0909	6.4	F	0832	6.9
	1611	-0.4		1532	-1.1
	2331	4.8		2259	4.9
3	0346	3.2	18	0311	3.0
F	0951	6.4	Sa	0926	7.1
	1643	-0.5		1618	-1.4
				2337	5.1
4	0010	4.9	19	0404	2.6
Sa	0428	3.1	Su	1018	7.2
	1027	6.3		1703	-1.6
	1718	-0.5			
5	0042	4.9	20	0016	5.3
Su	0505	3.1	M	0457	2.3
	1102	6.1		1111	7.0
	1750	-0.4		1745	-1.4
6	0114	4.8	21	0055	5.5
M	0544	3.0	Tu	0549	2.0
	1137	5.9		1203	6.6
	1818	-0.3		1828	-1.1
7	0142	4.8	22	0133	5.7
Tu	0623	2.9	W	0645	1.7
	1213	5.6		1258	5.4
	1851	-0.1		1910	-0.5
8	0211	4.9	23	0214	5.9
W	0705	2.8	Th	0746	1.5
	1249	5.2		1355	5.4
	1921	0.2		1953	0.2
9	0238	5.0	24	0254	6.0
Th	0751	2.7	F	0849	1.3
	1333	4.8		1459	4.7
	1952	0.6		2039	1.0
10	0307	5.1	25	0339	6.1
F	0843	2.5	Sa	0959	1.2
	1419	4.3		1617	4.1
	2025	1.1		2130	1.8
11	0343	5.3	26	0426	6.1
Sa	0948	2.2	Su	1115	1.0
	1522	3.9		1754	3.9
	2106	1.7		2229	2.5
12	0418	5.5	27	0520	6.1
Su	1051	1.8	M	1227	0.8
	1650	3.6		1933	3.9
	2149	2.2		2341	2.9
13	0503	5.8	28	0615	6.1
M	1157	1.3	Tu	1333	0.5
	1842	3.5		2049	4.2
	2252	2.7			
14	0551	6.0	29	0051	3.2
Tu	1259	0.7	W	0709	6.1
	2018	3.8		1426	0.3
				2145	4.5
15	0006	3.1	30	0156	3.2
W	0644	6.3	Th	0805	6.1
	1354	0.0		1513	0.0
	2124	4.2		2230	4.7
			31	0247	3.1
			F	0851	6.1
				1550	-0.1
				2305	4.8

FEBRUARY 1992

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0332	2.9	16	0304	2.4
Sa	0933	6.1	Su	0947	6.7
	1622	-0.2		1557	-0.1
	2336	4.8		2302	5.2
2	0412	2.7	17	0356	1.8
Su	1011	6.0	M	1013	6.7
	1654	-0.3		1639	0.1
				2339	5.5
3	0003	4.8	18	0447	1.3
M	0448	2.5	Tu	1108	6.5
	1050	5.8		1721	-0.8
	1722	-0.2			
4	0028	4.9	19	0015	6.7
Tu	0525	2.3	W	0539	0.9
	1125	5.6		1200	6.1
	1751	-0.1		1800	-0.4
5	0052	4.9	20	0051	5.9
W	0559	2.1	Th	0629	0.6
	1200	5.3		1255	5.6
	1816	0.2		1841	0.3
6	0118	5.1	21	0128	6.0
Th	0636	2.0	F	0722	0.5
	1239	5.0		1352	5.0
	1845	0.6		1923	1.0
7	0143	5.2	22	0207	6.1
F	0718	1.8	Sa	0821	0.5
	1321	4.6		1456	4.5
	1913	1.0		2009	1.7
8	0211	5.4	23	0251	6.0
Sa	0804	1.6	Su	0920	0.6
	1413	4.3		1612	4.1
	1945	1.6		2059	2.4
9	0245	5.5	24	0337	5.9
Su	0859	1.4	M	1029	0.7
	1515	3.9		1747	3.9
	2024	2.1		2203	2.9
10	0324	5.7	25	0432	5.7
M	1002	1.2	Tu	1145	0.8
	1647	3.6		1918	4.0
	2109	2.7		2323	3.2
11	0412	5.8	26	0535	5.6
Tu	1111	0.9	W	1253	0.7
	1834	3.7		2029	4.3
	2218	3.1			
12	0509	6.0	27	0042	3.2
W	1223	0.4	Th	0641	5.5
	2007	4.0		1351	0.5
	2344	3.3		2116	4.5
13	0613	6.2	28	0143	3.0
Th	1325	-0.1	F	0736	5.5
	2106	4.3		1439	0.3
				2153	4.6
14	0101	3.2	29	0234	2.7
F	0719	6.4	Se	0828	5.5
	1421	-0.6		1518	0.2
	2148	4.7		2223	4.7
15	0207	2.8			
Sa	0819	6.6			
	1511	-0.9			
	2228	4.9			

MARCH 1992

Day	Time h.m.	Ht. ft.	Day	Time h.m.	Ht. ft.
1	0316	2.3	16	0258	1.4
Su	0914	5.5	M	0915	5.9
	1550	0.1		1529	-0.5
	2251	4.8		2223	5.4
2	0353	2.0	17	0347	0.8
M	0959	5.5	Tu	1011	5.9
	1619	0.1		1611	-0.3
	2313	4.8		2258	5.7
3	0430	1.7	18	0436	0.2
Tu	1038	5.3	W	1106	5.7
	1648	0.2		1652	0.1
	2338	5.0		2332	5.9
4	0503	1.4	19	0525	-0.2
W	1117	5.2	Th	1202	5.4
	1716	0.5		1730	0.6
5	0000	5.1	20	0007	6.0
Th	0535	1.1	F	0611	-0.4
	1155	4.9		1257	5.0
	1744	0.8		1812	1.2
6	0023	5.3	21	0043	6.0
F	0611	0.9	Sa	0659	-0.3
	1239	4.7		1352	4.7
	1812	1.2		1854	1.8
7	0051	5.4	22	0121	5.9
Sa	0649	0.7	Su	0748	-0.1
	1326	4.5		1455	4.4
	1844	1.7		1940	2.4
8	0121	5.6	23	0203	5.7
Su	0735	0.6	M	0844	0.1
	1419	4.2		1607	4.2
	1916	2.2		2035	2.8
9	0158	5.6	24	0251	5.5
M	0827	0.5	Tu	0943	0.4
	1526	4.0		1730	4.1
	1958	2.6		2148	3.1
10	0239	5.7	25	0347	5.2
Tu	0926	0.4	W	1052	0.6
	1652	3.8		1846	4.1
	2054	3.0		2311	3.2
11	0334	5.7	26	0449	5.0
W	1035	0.3	Th	1159	0.7
	1822	3.9		1947	4.3
	2216	3.2			
12	0442	5.7	27	0024	3.0
Th	1150	0.1	F	0558	4.8
	1938	4.2		1258	0.6
	2344	3.1		2027	4.4
13	0555	5.7	28	0123	2.8
F	1254	-0.2	Sa	0701	4.8
	2028	4.5		1351	0.6
				2102	4.5
14	0101	2.7	29	0213	2.2
Sa	0707	5.8	Su	0803	4.8
	1354	-0.4		1428	0.5
	2109	4.8		2130	4.7
15	0203	2.1	30	0255	1.7
Su	0813	5.9	M	0855	4.8
	1443	-0.6		1504	0.5
	2147	5.1		2155	4.8
			31	0331	1.2
			Tu	0942	4.8
				1538	0.7
				2217	5.0

Time meridian 120° W. 0000 is midnight, 1200 is noon.
Heights are referred to mean lower low water which is the chart datum of soundings.

ABBREVIATIONS (For complete list of Symbols and Abbreviations, see Chart No. 1.)

Aids to Navigation (lights are white unless otherwise indicated):

AERO aeronautical	G green	Mo morse code	R TR radio tower
Al alternating	Gp group	N nun	Rot rotating
B black	IQ interrupted quick	OBSC obscured	s seconds
Bn beacon	Iso isophase (E Int)	Oc occulting	SEC sector
C can	LT HO lighthouse	Or orange	St M statute miles
DIA diaphone	M nautical mile	Q quick	VQ very quick
E Int equal interval (Iso)	m minutes	R red	W white
F fixed	MICRO TR microwave tower	Ra Ref radar reflector	WHIS whistle
Fl flashing	Mkr marker	R Bn radiobeacon	Y yellow

Bottom characteristics:

Blds boulders	Co coral	gy gray	Oys oysters	so soft
bk broken	G gravel	h hard	Rk rock	Sh shells
Cy clay	Grs grass	M mud	S sand	sy sticky

Miscellaneous:

AUTH authorized Obstn obstruction PD position doubtful Subm submerged
ED existence doubtful PA position approximate Rep reported
21 Wreck, rock, obstruction, or shoal swept clear to the depth indicated.
(2) Rocks that cover and uncover, with heights in feet above datum of soundings.
COLREGS: International Regulations for Preventing Collisions at Sea, 1972.
Demarcation lines are shown thus. — — — — —

FACILITIES

Locations of public marine facilities are shown by large magenta numbers with leaders and refer to the facility tabulation.

DETERMINATION OF WIND SPEED FROM SEA CONDITION

Wind Speed (knots)	Wind Description	Sea Conditions	Wind Force (Beaufort)	Probable Wave Height (feet)
0-1	Calm	Sea smooth and mirror-like.	0	-
1-3	Light air	Scale-like ripples without foam crests.	1	¼
4-6	Light breeze	Small, short wavelets; crests have a glassy appearance and do not break.	2	½
7-10	Gentle breeze	Large wavelets; some crests begin to break; foam of glassy appearance. Occasional white foam crests.	3	2
11-16	Moderate breeze	Small waves, becoming longer; fairly frequent white foam crests.	4	4
17-21	Fresh breeze	Moderate waves, taking a more pronounced long form; many white foam crests; there may be some spray.	5	6
22-27	Strong breeze	Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray.	6	10
28-33	Near gale	Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind; spindrift begins.	7	14
34-40	Gale	Moderately high waves of greater length; edges of crests break into spindrift; foam is blown in well-marked streaks along the direction of the wind.	8	18

This nautical chart has been designed to promote safe navigation. The National Ocean Service encourages users to submit corrections, additions, or comments for improving this chart to the Director, Charting and Geodetic Services (N/CG22), National Ocean Service, NOAA, Rockville, Maryland 20852.